1729 Two-Year Clinical Evaluation of Polyacid Modified Resin Restorations After Use of Softstart Polymerization

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The aim of the present study was to examine the influence of softstart polymerization on the clinical performance and marginal integrity of polyacid modified resin restorations (PMR) in Class V cavities Eighty PMR restorations (40 Dyract [DeTrey/Dentsply] (DP) 40 Hytac [ESPE] (HY)) were placed in 20 patients with (n_{pat}=10) and without preparation (n_{pat}=10) according to an exact split mouth design Margins were coated both in enamel and in dentin The restorations were either conventionally cured (CP) or were cured with softstart polymerization (SSP) using a microprocessored light curing unit (Elipar highlight [ESPE]) Thus each patient had 4 restorations (DY CP DY SSP HY CP HY SSP) which were examined clinically according to modified USPHS-criteria and by quantitative SEM analysis up to two years Statistical analysis was performed using the Mann Whitney U-test ($p \leq 0.05$) and the Error Rates Method Four restorations (1 DY and 3 HY) which were all placed without preparation were lost after 2 years Clinically all 76 remaining restorations showed no recurrent caries up to two years Marginal discoloration occured in 30 73% of the HY and in 22 45% of the DY restorations Using an explorer margins of 63 90% of the HY and 44 73% of the DY restorations were perceptible (rating bravo) after two years Using the quantitative margin analysis HY SSP with preparation showed significantly less gap formation at the enamel interface compared to DY SSP Beyond that there were no differences between the materials for each polymerization mode and interface with and without preparation after two years Polymerization mode interface and preparation had no influence on the marginal adaptation of DY whereas HY showed less gap formation in enamel compared to dentin for both polymerization modes without preparation In dentin HY SSP performed better with preparation There were no differences between the one- and the two year results for each group Both materials showed a satisfactory clinical performance up to two years In general, both material and polymerization technique had no significant influence on marginal adaptation This study was supported by ESPE Seefeld Germany

1730 Clinical performance of class I and II compomer restorations up to 5 years

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In a retrospective study on class I and II compomer fillings (Dyract Dentsply/DeTrey) the marginal adaptation anatomic form recurrent caries colour match marginal discoloration and surface was analyzed according to the Ryge criteria in 129 out of 790 restorations placed in a private dental office in Bad Ems Germany The patient mean age (69 male 60 female) was 34 3 ± 12 9 years the restoration mean age was 3 1 ± 0 7 years (min 1 7 max 4 8 years) All fillings were applied with the use of a metal matrix band system and without rubberdam For all the restorations the one component adhesive Dyract PSA was used without etching The fillings were distributed in three groups according to their age and scored according to the Ryge criteria The Ryge evaluation was carried out by a dental school independent examiner The results (%) are shown in the table

	Marginal Adaptation				Anatomic Form			Recur Caries		Colour Match				Marginal Discoloration			Surface			
Age	A	B	C	D	A	B	C	A	B	O	A	B	C	A	B	C	R	S	T	V
1-3	89 1	10 9	0 0	0 0	60 9	39 1	0 0	93 5	6 5	0 0	76 1	23 9	0 0	34 8	63 0	1 0	87 0	10 9	0 0	0 0
3-4	80 3	19 7	0 0	0 0	62 3	37 7	0 0	85 3	14 8	0 0	78 7	21 3	0 0	41 0	50 8	8 2	85 3	9 8	2 2	0 0
4-5	77 8	22 2	0 0	0 0	77 8	22 2	0 0	66 7	33 3	0 0	66 7	33 3	0 0	22 2	77 8	0 0	77 8	22 2	4 9	0 0

Allthough the average age of the fillings was > 3 years the results of less than 10 % charly and tango scores for marginal adaptation anatomic form surface and marginal discoloration were surprisingly good The higher prevalence of recurrent caries for fillings > 3 years limits the indication of Dyract in combination with PSA adhesive to semipermanent restorations in posterior teeth The large number of patients (83 %) which could not be evaluated (mostly lack of place of residence information) may limit the validation of this results

1731 Compomer for class I/II restorations – results after 12 months.

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The aim of this prospective long-term clinical study is to evaluate the potential of the compomer Hytac®Aplitip (Espe Seefeld) as a permanent filling material in class I/II cavities of posterior teeth Originally 115 fillings were placed in 24 patients by 3 operators in accordance with the manufactures instructions (total etching, total bonding) After 6 months 80 of 88 examined fillings in 18 patients were clinically acceptable After 12 months 76 fillings in 17 patients (dropout 5%) were examined and evaluated according to the previously layed down clinical criteria
4 fillings (5%, 1 class I, 3 class II, 3 molar, 1 premolar) were not acceptable and scheduled for replacement (3 Charlie, 1 Delta) 72 fillings were clinically acceptable (20 Alpha, 52 Bravo) Delta and Charlie scores were caused by discolored open margins (n=2), distinct negative marginal steps (n=1), under-contoured anatomic form (n=2), distinct loss of filling material (n=1), perusing crack (n=1), mobile filling (n=1), missing approximal contact (n=1) and excessive sensitivity (n=1)
No difference relating to all of the assessment criteria could be calculated between class I and class II restorations (exact fisher test, p=0 74) and between the 3 operators (chi square test, p= 0,07)
In consideration of the Delta and Charlie scores the main cause for the loss of fillings after 12 months is the mechanical failure of the fillings
Because of the failure rate of 9% after 6 months and another 5% after 12 months Hytac®can only be considered as a semipermanent filling material for both class I/II cavities but not for permanent fillings.

1732 In vivo Margin Analysis of Compomers in Classes I and II Cavities

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Direct resin composite restorations by use of the enamel etch technique and dentin adhesives are an alternative to amalgam restorations in small cavities Polyacid modified resin composites (compomers) are very popular with dental practitioners due to their easy handling and are subsequently nowadays used in the same way to restore posterior teeth like resin composites The aim of the present study was to evaluate the marginal adaptation of the two compomers Hytac® (Espe) and Dyract® AP (DeTrey Dentsply) in class I and II cavities In a controlled prospective clinical study 65 cavities (38 premolars 27 molars/44 maxillary 21 mandibulary/15 occlusal 41 proximal box-only preparations 9 MOD) in 28 patients (19 female/9 male) were restored with the compomer materials by three dentists Extension for prevention was disregarded therefore box-only preparations dominated 34 fillings were inserted using the combination OSB® /Hytac® with selectively etched enamel and without lining The patients received 31 Prime&Bond 2 1®/Dyract AP® restorations as reference At baseline after 6 and 12 months replicas of the restorations were made and examined at 130-fold magnification by use of a stereo light microscope (SV 11 Zeiss Germany) in combination with a 3 CCD color camera and a frame grabber (Matrox Meteor RGB) For digitization the KS 100 software (Zeiss) and for the margin analysis the software WinMes 2 0 was used The materials revealed no statistically significant difference in any criterion ($p>0.05$ Friedman 2 way ANOVA) For the pooled data the three investigations resulted in statistically significant differences for the following criteria ($p<0.05$ Friedman 2-way ANOVA baseline/6 months/12 months [in % of entire evaluable margin length]) **Perfect margin** 62/72/76 **negative step formation** 3/7/8 **gap formation** 0/1/1 and **overhang** 24/14/10 No considerable differences were detected for the criteria marginal breakdown and positive step formation
Light microscopic margin analysis of the polyacid modified composites Hytac® and Dyract®AP showed acceptable marginal adaptation after one year of clinical service This may be due to the use of additional enamel etching with phosphoric acid This study was supported by Espe Seefeld Germany

1733 One-Year Clinical Evaluation of a Compomer Luting Cement

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Indirect composite restorations have grown in popularity as alternatives to metal and ceramic materials The purpose of this study was to evaluate the clinical performance of composite inlays cemented with a new one-component compomer cement 36 indirect composite inlays were placed in 32 adult male and female patients 19 molars and 17 premolars were restored with Spectrum TPH composite resin polymerized with a Triad 2000 curing unit using an indirect technique The restorations were cemented with a light cured only one component compomer cement after the dentin and enamel were acid conditioned for 15 seconds with 36% phosphoric acid and treated with Prime & Bond 2 1 Placement and finishing were done according to manufacturer's instructions The cement was polymerized by 3 40 second cures from the occlusal buccal and lingual surfaces of each restored tooth The restorations were evaluated by two examiners at baseline and at one year using the following evaluative parameters color match (CM) anatomic form (A) marginal discoloration (MD) and marginal adaptation (MA) according to modified Ryge criteria, the presence or absence of recurrent decay pre op and post op sensitivity restoration retention and failure due to other causes Post op sensitivity was reported for one restoration 7 days after placement but this was resolved at a one month telephone survey Color match marginal discoloration and marginal integrity of the restorations were 100% Alpha at baseline At the end of one year 26 of the original 36 restorations were available for evaluation There was no reported post op sensitivity at any recall period after 10 days At one year 95 8% of the restorations rated Alpha and 4 2% rated Bravo for color match 75% rated Alpha while 25% rated Bravo for marginal adaptation 83 3% rated Alpha while 16 7% rated Bravo for marginal discoloration and 95 8% of the restorations rated Alpha and 4 2% rated Bravo for anatomic form No secondary caries was observed at the one year recall and no restoration were judged to have failed The marginal discoloration observed was superficial and could be easily removed with a hand instrument The clinical performance of the new cement for luting composite resin inlays was very good after one year Further observation is needed to determine the long term performance of this material This study sponsored by DeTrey/Dentsply and the Health Future Foundation

1734 Clinical Evaluation of Dyract Flowable Compomer

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The purpose of this study was to evaluate the clinical performance of a new visible light cured (VLC) flowable compomer restorative material (Dyract Flow Dentsply) in non-stress-bearing restorations Thirty-two Class V non-carious non retentive cervical lesions were restored with Dyract Flow following manufacturer's instructions Prior to restoration teeth were pumiced with a prophy cup and acid etched with 34% phosphoric acid Prime/adhesive was applied and left undisturbed for 30 seconds then air thinned followed by light curing for 10 seconds A second application of prime/adhesive was immediately air thinned and light cured for 10 seconds Dyract Flow was placed incrementally with each increment being light-cured for 40 seconds Restorations were finished and polished using the Enhance Polishing System (L D Caulk) All restorations were evaluated at baseline and 6 months using Ryge criteria

Alpha Percentages for Baseline/6 Months

	Baseline	6 Months
Retention Rate	100%	100%
Color Match	100%	100%
Marginal Adaptation/Integrity	100%	91%
Marginal Discoloration	100%	97%
Anatomic Form	100%	100%
Secondary Caries	100%	100%
Recall Rate	100%	100%

The restorations that were rated bravo for marginal adaptation could have been easily polished to an alpha margin if the restorations were not in this study All restorations were clinically acceptable after 6 months This study was supported by the L D Caulk Company

1735 Clinical Evaluation of Light Cured Flowable Compomere in Class V Restorations

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The purpose of this study was to evaluate the clinical performance of DMG's visible light cured PrimaFlow® flowable compomer material in 50 Class V restorations After appropriate isolation the cavity preparation and caries removal was achieved using a high-speed handpiece with local anesthesia if needed Following cavity preparation, the teeth were etched with 37% phosphoric acid (H_3PO_4) for 30 seconds, thoroughly rinsed with water, and gently air-dried (not desiccated) A thin coat of Ecusit Primer/Mono was applied to the etched surfaces, spread thin, and light cured for 20 seconds A flowable compomer was placed on the dentin/cementum cavity floors of all the preparations according to the manufacturer's directions It was then light cured for 40-60 seconds and finished with diamonds and Dentsply Caulk's Enhance finishing system. Evaluation was assessed at initial placement (baseline), 6 months and 1 year using USPHS criteria, photographs, and an elastomeric impression of the restoration. A periapical radiograph was taken at baseline and 1 year recall The parameters assessed by two different operators working independently were retention, marginal integrity, marginal leakage, color stability, abrasive resistance, surface texture, surface staining, post-op sensitivity and soft tissue health. All 50 restorations were graded Alpha at baseline and 6 month recalls. At the one-year recall, 4 restorations were graded Bravo for surface staining 2 Charlies for retention, and 2 Bravos for marginal leakage In conclusion this flowable compomer material coupled with its bonding agent demonstrates clinical acceptability in all categories assessed making it suitable for Class V restorations This study was funded in part by DMG

1736 Clinical investigation of Class V GIC restorations 18 months results

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The purpose of this study was to assess the clinical performance of a newly developed high strength glass ionomer restorative material (ChemFlex Dentsply DeTrey) over an 18-month period The baseline sample comprised 39 subjects of whom 35 were available for the final recall The clinical evaluations followed the ADA Guidelines for assessment of dentine and enamel adhesive materials All restorations were placed by one investigator under clinical conditions of a dental school clinic Evaluations at baseline and at 3 6 and 18 months were carried out by two assessors A total of 68 restorations were placed in the 35 recalled patients and the frequency distribution showed that the most frequently placed restorations were on teeth 14 and 15 followed by 13 32 33 and 34 Nine parameters were evaluated and all data were analyzed using SAS 6 12 for Windows A Chi square test (no Yates Correction)/Fisher's Exact test was used The difference was considered significant when $p<0.05$ Seven restorations were missing or dislodged and were judged to have failed representing a failure rate of about 10% Results of the evaluation for each of the parameters for Alpha ratings were color match = 26 5% cavo surface margin discoloration = 72 1% marginal integrity = 97 1% recurrent caries = 100% wear/anatomic form = 97 1% surface texture = 100% swelling out = 100% gingival status = 98 5% and hypersentivity = 100% Statistical analyzes of the 3 months and 18 months results for the above 9 parameters showed that none of them were significantly different with the exception of the cavo-surface margin discoloration It may be concluded that the improved high strength GIC (ChemFlex) is a highly satisfactory restorative material over an 18 months period